#6

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket No: 16313-0037

In re patent application of

COSTA E SILVA, OSWALDO DA *et al.*

Serial No. 09/828,447

Filed: April 6, 2001

For: SIGNAL TRANSDUCTION STRESS-RELATED PROTEINS AND METHODS OF USE IN PLANTS

STATEMENT TO SUPPORT FILING AND SUBMISSION IN ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents
Washington, D.C. 20231
Box SEQUENCE

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and

3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United

States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,

Date

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SEQUENCE LISTING

<110> COSTA E SILVA, OSWALDO DA
BOHNERT, HANS J.
VAN THIELEN, NOCHA
CHEN, ROUYING
ISHITANI, MANABU

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aaagctactt cgacctgggt agcttttcta agctaggata gttatatgaa aaagataatt 1380

aaacttcaag cggatcaata tagctcacag aatccattct tcgtttctgt ttcctgagaa 1440
cccaccaatg tccaagttac aaaactccgt gggagaaaca gacgtgcagt gcatgcataa 1500
ggttggtgtg attgtttgcg tagtgatgtt tctggatgac ttgaatagaa tcaagtgcat 1560
agatagtcaa ttgtctcaca caagatcttc gaacaatcca ccaaccggcg ttgccagtcg 1620
tgcggagggc acggttggtg ggacggacta gcggtgcgac gcgtgtagag aatgcattgg 1680
cggctgcaga ttagacagtt gttcgcatcc gttgtaggat agatcgttag gatactcgac 1740
tcttacctgt gttcgaattc cggcatcgga agcccccgag tgaaaattgg acgagctcgc 1800

<210> 11
<211> 1054
<212> PRT
<213> Physcomitrella patens

<400> 11

Met	Cys	Ser	Ile	Pro	Phe	Gly	Arg	Lys	Lys	Ser	Lys	Lys	Gly	Asp	Leu
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Ala	Gln	Asp	Leu	Leu	Gly	Asp	Val	Phe	Ser	Thr	Tyr	Ser	Glu	Asn	Gly
			20					25					30		
Lys	Leu	Asp	Ala	Glu	Gly	Leu	Leu	Lys	Phe	Leu	Gln	Thr	Glu	Gln	Gly
		35					40					45			
Asp	Ser	Lys	Ser	Ser	Leu	Asp	Asp	Ala	Lys	His	Leu	Val	Glu	Leu	Ile
	50					55					60				
Arg	Asn	Glu	Arg	His	Lys	Ser	Lys	Phe	Pro	Gly	Phe	Ile	Val	Ser	Ser
65					70					75					80
Asp	Leu	Ser	Lys	Gly	Asp	Phe	Lys	Asn	Tyr	Val	Leu	Ser	Pro	Asp	Leu
				85					90					95	
Asn	Gly	Val	Leu	Glu	Ser	Thr	Val	His	Gln	Asp	Met	Thr	Gln	Pro	Leu
			100					105					110		
Ser	His	Tyr	Phe	Ile	Phe	Thr	Gly	His	Asn	Ser	Tyr	Leu	Thr	Gly	Asn
		115					120					125			
Gln	Leu	Ser	Ser	Asp	Ser	Ser	Asp	Val	Pro	Ile	Ala	Ala	Ala	Leu	Gln
	130					135					140				
Arg	Gly	Val	Arg	Val	Val	Glu	Leu	Asp	Leu	Trp	Pro	Asp	Asp	Lys	Gly
145					150					155					160
Gly	Ile	Lys	Val	Thr	His	Gly	Asn	Thr	Leu	Thr	Ser	Pro	Val	Ala	Phe
				165					170					175	
Glu	Lys	Cys	Ile	Lys	Ala	Ile	Lys	Ala	Asn	Ala	Phe	Val	Ser	Ser	Lys
			180					185					190		
Tyr	Pro	Val	Val	Ile	Thr	Leu	Glu	Asp	His	Leu	Ser	Ser	Pro	Leu	Gln
		195					200					205			
Ala	Leu	Ala	Ala	Glu	Thr	Leu	Thr	Asn	Ile	Leu	Gly	Glu	Asp	Leu	Tyr
	210					215					220				

Tyr Pro Pro Ser Ser Asp Gly Phe Lys Glu Leu Pro Ser Pro Glu Ser
225 230 235 240

Leu Lys Gly Lys Ile Leu Ile Ser Thr Lys Pro Pro Lys Glu Tyr Leu
245 250 255

Glu Ala Ala Val Ala Gln Lys Ser Ala Leu Lys Asp Glu Lys Ile Leu
260 265 270

Asn Glu Phe Lys Lys Ala Asp Lys Leu Gln Glu Gln Ser Thr Ala Pro
275 280 285

Val Lys Ser Pro Val Glu Lys Lys Ile Ala Val Pro Pro Ser Glu Lys
290 295 300

Thr Lys Ser Ile Ser Glu Glu Lys Asp Leu Ser Glu Lys Val Gly Asn
305 310 315 320

Leu Arg Val Asp Ser Glu Gly Glu Ser Ala Asp Pro Ala Pro Ala Ser
325 330 335

Ser Pro Asp Gly Lys Lys Ala Thr Leu Thr Ala Asp Ser Glu Ser Asp
340 345 350

Asp Asp Asp Asn Lys Lys Asn Pro Glu Tyr Ala Arg Leu Ile Thr Ile
355 360 365

His Gln Ser Lys Pro Ser Lys Gly Thr Thr Val Glu Asp Arg Leu Lys
370 375 380

Val Glu Gly Thr Val Val Arg Ile Ser Leu Ser Glu Thr Lys Leu Glu
385 390 395 400

Lys Val Thr Glu Glu Phe Pro Glu Leu Val Val Lys Phe Thr Gln Arg
405 410 415

Asn Ile Leu Arg Met Cys Ser Ile Pro Phe Gly Arg Lys Lys Ser Lys
420 425 430

Lys Gly Asp Leu Ala Gln Asp Leu Leu Gly Asp Val Phe Ser Thr Tyr
435 440 445

Ser Glu Asn Gly Lys Leu Asp Ala Glu Gly Leu Leu Lys Phe Leu Gln
450 455 460

Thr Glu Gln Gly Asp Ser Lys Ser Ser Leu Asp Asp Ala Lys His Leu
465 470 475 480

Val Glu Leu Ile Arg Asn Glu Arg His Lys Ser Lys Phe Pro Gly Phe
485 490 495

Ile Val Ser Ser Asp Leu Ser Lys Gly Asp Phe Lys Asn Tyr Val Leu
500 505 510

Ser Pro Asp Leu Asn Gly Val Leu Glu Ser Thr Val His Gln Asp Met
515 520 525

```
Thr Gln Pro Leu Ser His Tyr Phe Ile Phe Thr Gly His Asn Ser Tyr
    530                 535                 540

Leu Thr Gly Asn Gln Leu Ser Ser Asp Ser Ser Asp Val Pro Ile Ala
545                 550                 555                 560

Ala Ala Leu Gln Arg Gly Val Arg Val Val Glu Leu Asp Leu Trp Pro
                565                 570                 575

Asp Asp Lys Gly Gly Ile Lys Val Thr His Gly Asn Thr Leu Thr Ser
            580                 585                 590

Pro Val Ala Phe Glu Lys Cys Ile Lys Ala Ile Lys Ala Asn Ala Phe
        595                 600                 605

Val Ser Ser Lys Tyr Pro Val Val Ile Thr Leu Glu Asp His Leu Ser
    610                 615                 620

Ser Pro Leu Gln Ala Leu Ala Ala Glu Thr Leu Thr Asn Ile Leu Gly
625                 630                 635                 640

Glu Asp Leu Tyr Tyr Pro Pro Ser Ser Asp Gly Phe Lys Glu Leu Pro
                645                 650                 655

Ser Pro Glu Ser Leu Lys Gly Lys Ile Leu Ile Ser Thr Lys Pro Pro
            660                 665                 670

Lys Glu Tyr Leu Glu Ala Ala Val Ala Gln Lys Ser Ala Leu Lys Asp
        675                 680                 685

Glu Lys Ile Leu Asn Glu Phe Lys Lys Ala Asp Lys Leu Gln Glu Gln
    690                 695                 700

Ser Thr Ala Pro Val Lys Ser Pro Val Glu Lys Lys Ile Ala Val Pro
705                 710                 715                 720

Pro Ser Glu Lys Thr Lys Ser Ile Ser Glu Glu Lys Asp Leu Ser Glu
                725                 730                 735

Lys Val Gly Asn Leu Arg Val Asp Ser Glu Gly Glu Ser Ala Asp Pro
            740                 745                 750

Ala Pro Ala Ser Ser Pro Asp Gly Lys Lys Ala Thr Leu Thr Ala Asp
        755                 760                 765

Ser Glu Ser Asp Asp Asp Asp Asn Lys Lys Asn Pro Glu Tyr Ala Arg
    770                 775                 780

Leu Ile Thr Ile His Gln Ser Lys Pro Ser Lys Gly Thr Thr Val Glu
785                 790                 795                 800

Asp Arg Leu Lys Val Glu Gly Thr Val Val Arg Ile Ser Leu Ser Glu
                805                 810                 815

Thr Lys Leu Glu Lys Val Thr Glu Glu Phe Pro Glu Leu Val Val Lys
            820                 825                 830
```

```
Phe Thr Gln Arg Asn Ile Leu Arg Val Tyr Pro Ala Gly Asn Arg Val
        835                 840                 845

Asn Ser Ser Asn Tyr Asp Pro Thr Ala Ala Trp Ile His Gly Ala Gln
    850                 855                 860

Met Val Ala Gln Asn Met Gln Gly Tyr Gly Lys Glu Leu Trp Gln Ala
865                 870                 875                 880

His Gly Lys Phe Arg Gly Asn Gly Gly Cys Gly Tyr Ile Leu Lys Pro
                885                 890                 895

Lys Tyr Leu Leu Glu Asp Leu Pro Asn Gly Lys Pro Phe Asn Pro Ser
            900                 905                 910

Ala Pro Gly Asp Thr Lys Met Ile Leu Lys Val Lys Val Met Thr Thr
        915                 920                 925

Met Gly Trp Asp Lys Ala Phe Pro Lys Tyr His Phe Asp Leu Phe Ser
    930                 935                 940

Pro Pro Asp Phe Phe Thr Arg Leu Leu Val Thr Gly Val Pro Ala Asp
945                 950                 955                 960

Val Ala Lys Trp Lys Thr Ser Val Ile Asp Asp Val Trp Glu Pro His
                965                 970                 975

Trp Asn Glu Asp His Glu Phe Tyr Leu Lys Cys Pro Glu Leu Ala Leu
            980                 985                 990

Leu Arg Ile Glu Val Arg Asp His Asp Glu Glu Ser Gln Asp Glu Phe
        995                1000                1005

Glu Gly Gln Ala Cys Leu Pro Met His Glu Ile Lys Asp Gly Tyr Arg
   1010                1015                1020

Cys Val Gln Met Tyr Asp Lys Lys Gly Ser Val Leu Lys Gly Val Lys
1025                1030                1035                1040

Met Leu Phe His Phe Gln Lys Arg Ser Phe Ser Pro Val Gln
                1045                1050
```

<210> 12
<211> 628
<212> PRT
<213> Physcomitrella patens

<400> 12

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Met Cys Ser Ile Ala Cys Cys Arg Ser Gly Thr Pro Lys Gly Asp Pro
  1               5                  10                  15

Glu Gln Asp Leu Val Gly Glu Val Phe Thr Ile Tyr Ser Glu Asn Glu
            20                  25                  30

Arg Met Ser Ala Glu Gly Leu Leu Lys Phe Leu His Thr Glu Gln Gly
        35                  40                  45
```

Asp Val Asp Phe Thr Leu Asp Asp Ala Lys Gln Ile Met Glu Arg Ile
50 55 60

Arg Lys Asp Trp Lys Lys Ser Phe Gly Leu Ala Ser Ile Asn Ser Asp
65 70 75 80

Leu Ser Lys Glu Ala Phe Arg Lys Tyr Leu Met Asn Pro Asp Leu Asn
85 90 95

Gly Val Leu His Asn Val Val His Gln Asp Met Thr Gln Pro Met Ser
100 105 110

His Tyr Phe Ile Phe Thr Gly His Asn Ser Tyr Leu Thr Gly Asn Gln
115 120 125

Leu Ser Ser Asp Ser Ser Asp Thr Pro Ile Ala Ala Ala Leu Arg Arg
130 135 140

Gly Val Arg Val Val Glu Leu Asp Leu Trp Pro Asp Asp Lys Gly Gly
145 150 155 160

Met Lys Val Thr His Gly Asn Thr Leu Thr Asn Pro Val Ser Phe Gln
165 170 175

Lys Cys Val Thr Ala Ile Lys Asn Asn Ala Phe Phe Thr Ser Glu Tyr
180 185 190

Pro Val Cys Val Thr Ile Glu Asp His Leu Thr Ser Glu Leu Gln Gly
195 200 205

His Ala Ala Glu Ile Leu Glu Gln Ile Leu Gly Asp Ala Leu Tyr Tyr
210 215 220

Pro Pro Thr Thr Asp Ala Leu Val Glu Phe Pro Ser Pro Glu Ser Leu
225 230 235 240

Lys Arg Lys Ile Ile Ile Ser Thr Lys Pro Pro Lys Glu Tyr Leu Glu
245 250 255

Ala Cys Ser Thr Gln Lys Leu Ala Met Glu Asn Arg Asn Leu Val Glu
260 265 270

Glu Leu Glu Lys Glu Asp Lys Leu Glu Gln Thr Thr Phe Ala Pro Leu
275 280 285

Glu Glu Asn His Ile Leu Gly Glu Asn Thr Pro Ser Leu Arg Lys Glu
290 295 300

Val Glu Val Leu Ser Gln Lys Glu Met Ser Thr Pro Ala Glu Leu Asn
305 310 315 320

Ser Arg Ser Pro Ser Asp Leu Gly Glu Ala Thr Ser Thr Arg Tyr Ser
325 330 335

Lys Ser Asn Asp Gly Asn Asp Asn Pro Lys His Phe Lys Tyr Ala Arg
340 345 350

```
Leu Ile Thr Ile Arg Leu Ala Lys His Ala Lys Gly Thr Ser Met Glu
        355                 360                 365

His Arg Leu Gln Val Asp Glu Ser Val Lys Arg Ile Ser Leu Ser Glu
    370                 375                 380

Ser Lys Leu Glu Lys Val Val Glu Lys Trp Pro Glu Ala Leu Val Lys
385                 390                 395                 400

Phe Thr Gln Lys Asn Ile Leu Arg Val Tyr Pro Ala Ala Asn Arg Val
                405                 410                 415

Asn Ser Ser Asn Phe Cys Pro Thr Leu Ala Trp Asn Tyr Gly Ala Gln
            420                 425                 430

Met Val Ala Gln Asn Met Gln Gly Tyr Gly Lys Glu Leu Trp Gln Ala
        435                 440                 445

Phe Gly Lys Phe Lys Gly Asn Gly Gly Cys Gly Tyr Val Leu Lys Pro
    450                 455                 460

Gln Tyr Leu Leu Glu Asn Leu Pro Ser Gly Val Pro Phe Asn Pro Thr
465                 470                 475                 480

Ser Pro Arg Asn Thr Thr Leu Ile Leu Lys Ile Lys Val Met Thr Thr
                485                 490                 495

Leu Gly Trp Asp Lys Ala Phe Ser Lys Arg His Phe Asp Leu Phe Ser
            500                 505                 510

Pro Pro Asp Phe Phe Thr Arg Val Ile Val Val Gly Val Pro Ala Asp
        515                 520                 525

Glu Ala Lys Trp Lys Thr Ser Val Val Asp Asn Ser Trp Ala Pro His
    530                 535                 540

Trp Asn Glu Asp His Glu Phe Ala Leu Lys Cys Pro Glu Leu Ala Leu
545                 550                 555                 560

Leu Arg Ile Glu Val Arg Asp His Asp Asp Asp Ser Lys Asp Glu Phe
                565                 570                 575

Glu Gly Gln Thr Cys Leu Pro Ile His Glu Val Arg Asp Gly Tyr Arg
            580                 585                 590

Cys Met Gln Met Tyr Asp Lys Lys Gly Asn Val Leu Lys Gly Val Leu
        595                 600                 605

Met Leu Phe His Phe Gln Lys Cys Lys Cys Thr Phe Gln Asp Thr Ala
    610                 615                 620

Pro Ile Ser Ser
625
```

<210> 13
<211> 258
<212> PRT

<213> Physcomitrella patens

<400> 13

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Met Ser Thr Glu Lys Glu Arg Glu Ser Tyr Val Tyr Met Ala Lys Leu
  1               5                  10                  15

Ala Glu Gln Ala Glu Arg Tyr Asp Glu Met Val Glu Ser Met Lys Lys
            20                  25                  30

Val Ala Lys Leu Asp Val Glu Leu Thr Val Glu Glu Arg Asn Leu Leu
        35                  40                  45

Ser Val Gly Tyr Lys Asn Val Ile Gly Ala Arg Arg Ala Ser Trp Arg
    50                  55                  60

Ile Met Ser Ser Ile Glu Gln Lys Glu Glu Ser Lys Gly Asn Glu Gln
65                  70                  75                  80

Asn Val Lys Arg Ile Lys Asp Tyr Arg His Lys Val Glu Glu Glu Leu
                85                  90                  95

Ser Lys Ile Cys Asn Asp Ile Leu Ser Ile Ile Asp Gly His Leu Ile
            100                 105                 110

Pro Ser Ser Ser Thr Gly Glu Ser Thr Val Phe Tyr Tyr Lys Met Lys
        115                 120                 125

Gly Asp Tyr Tyr Arg Tyr Leu Ala Glu Phe Lys Thr Gly Asn Glu Arg
    130                 135                 140

Lys Glu Ala Ala Asp Gln Ser Leu Lys Ala Tyr Gln Ala Ala Ser Ser
145                 150                 155                 160

Thr Ala Val Thr Asp Leu Ala Pro Thr His Pro Ile Arg Leu Gly Leu
                165                 170                 175

Ala Leu Asn Phe Ser Val Phe Tyr Tyr Glu Ile Leu Asn Ser Pro Glu
            180                 185                 190

Arg Ala Cys His Leu Ala Lys Gln Ala Phe Asp Glu Ala Ile Ala Glu
        195                 200                 205

Leu Asp Thr Leu Ser Glu Glu Ser Tyr Lys Asp Ser Thr Leu Ile Met
    210                 215                 220

Gln Leu Leu Arg Asp Asn Leu Thr Leu Trp Thr Ser Asp Leu Gln Asp
225                 230                 235                 240

Glu Gly Gly Asp Asp Gln Gly Lys Gly Asp Asp Met Arg Pro Glu Glu
                245                 250                 255

Ala Glu
```

<210> 14
<211> 257
<212> PRT
<213> Physcomitrella patens

<400> 14

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Met Thr Glu Leu Arg Glu Glu Asn Val Tyr Met Ala Lys Leu Ala Glu
  1               5                  10                  15

Gln Ala Glu Arg Tyr Asp Glu Met Val Glu Ala Met Glu Asn Val Val
             20                  25                  30

Lys Ala Val Glu Asn Glu Glu Leu Thr Val Glu Glu Arg Asn Leu Leu
         35                  40                  45

Ser Val Ala Phe Lys Asn Val Ile Gly Ala Arg Arg Ala Ser Trp Arg
     50                  55                  60

Ile Ile Ser Ser Ile Glu Gln Lys Glu Glu Ala Lys Gly Ser Glu Glu
 65                  70                  75                  80

His Val Ala Ala Ile Lys Glu Tyr Arg Ser Lys Val Glu Ala Glu Leu
                 85                  90                  95

Ser Thr Ile Cys Asp Thr Ile Leu Lys Leu Leu Asp Ser His Leu Ile
            100                 105                 110

Pro Ser Ser Thr Ser Gly Glu Ser Lys Val Phe Tyr Leu Lys Met Lys
        115                 120                 125

Gly Asp Tyr His Arg Tyr Leu Ala Glu Phe Lys Ala Gly Ala Glu Arg
    130                 135                 140

Lys Glu Ala Ala Glu Ala Thr Leu His Ala Tyr Lys His Ala Gln Asp
145                 150                 155                 160

Ile Ser Thr Thr Glu Leu Ala Ser Thr His Pro Ile Arg Leu Gly Leu
                165                 170                 175

Ala Leu Asn Phe Ser Val Phe Tyr Tyr Glu Ile Leu Val Ser Pro Asp
            180                 185                 190

Arg Ala Cys His Leu Ala Lys Gln Ala Phe Asp Glu Ala Ile Ser Glu
        195                 200                 205

Leu Asp Thr Leu Gly Glu Glu Ser Tyr Lys Asp Ser Thr Leu Ile Met
    210                 215                 220

Gln Leu Leu Arg Asp Asn Leu Thr Leu Trp Thr Ser Asp Met Gln Asp
225                 230                 235                 240

Asp Ile Gly Glu Glu Gly Lys Asp Ser Lys Val Glu Asp Ala Asp Asp
                245                 250                 255

His
```

<210> 15
<211> 337
<212> PRT
<213> Physcomitrella patens

<400> 15

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Met Ser Thr Glu Gly Gly Leu His Val Leu Asp Gly Ser Gln Ile Arg
 1               5                  10                  15

Asn Ala Leu Pro Asp Leu Gln Ser Arg Asn Ser Phe Ser Lys Asn Asp
            20                  25                  30

Glu Gly Ser Lys Gly Tyr Leu Thr Pro Ser Glu Met Arg Gln Ala Ala
        35                  40                  45

Glu Ala Glu Ala Ala Ala Leu Leu Leu Gly Val Gln Leu Ser Ser Lys
    50                  55                  60

Ile Phe Glu Asn Ala Ala Ser Lys Leu Pro Thr Glu Asp Ser Ala Glu
65                  70                  75                  80

Ile Thr Glu Asp Val Phe Ser Ser Thr Leu Gln Ser Tyr Leu Thr Ala
                85                  90                  95

Ile Ala Asp Ala Leu Glu Asp Glu Pro Val Val Val Ser Val Leu Asp
            100                 105                 110

Gly Ser Ala Ile Lys Ala Leu Leu Glu Asp Glu Asp Asp Phe Ala Met
        115                 120                 125

Val Ala Glu Asp Leu Phe Glu Lys Leu Asp Thr Asp Glu Ser Gly Lys
    130                 135                 140

Leu Ser Ser Lys Glu Leu Arg Pro Ala Ile Met Gln Leu Gly Val Glu
145                 150                 155                 160

Gln Gly Val Pro Pro Ala Ala Ala Thr Thr Glu Ala Glu Glu Leu Val
                165                 170                 175

Thr Lys Leu Ile Asn Lys Tyr Gly Gln Gly Thr Glu Glu Leu Gly Gln
            180                 185                 190

Ala Gln Phe Ala Ala Leu Leu Gln Asp Val Leu Gln Asp Met Ala Glu
        195                 200                 205

Ser Leu Ala Glu Lys Pro Ile Thr Ile Val Arg Asp Val Lys Met Leu
    210                 215                 220

Asn Gly Ser His Leu Arg Lys Met Leu Ala Asp Glu Lys Ala Phe Lys
225                 230                 235                 240

Glu Met Ala Asp Asn Met Phe Asn Asp Leu Asp Val Asn Lys Asp Gln
                245                 250                 255

Arg Leu Ser Lys Ala Glu Ile Arg Pro Leu Phe Glu Gln Gln Thr Ala
            260                 265                 270

Ala Trp Gly Leu Pro Pro Val Gly Asp Ser Asp Thr Glu Glu Leu Phe
        275                 280                 285

Asp Glu Val Phe Lys Ala Val Asp Ser Asp Lys Ser Gly Glu Val Glu
    290                 295                 300
```

Lys Pro Glu Phe Ala Val Leu Val Lys Thr Leu Leu Ala Asp Phe Ala
305 310 315 320

Glu Thr Leu Arg Leu Asn Pro Ile Leu Val Glu Ile Glu Thr Ala Ser
325 330 335

Arg

<210> 16
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
caggaaacag ctatgacc 18

<210> 17
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
ctaaagggaa caaaagctg 19

<210> 18
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 18
tgtaaaacga cggccagt 18

<210> 19
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 19
caggtccgag ctgacgatga acccag 26

<210> 20
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
atcccgggca atcgtcgggt gacattcctg ttc 33

<210> 21
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 21
gcgttaacca acacctcagc gttccacatg cat 33

<210> 22
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 22
cgagctcctc caccagattc ctgttc 26

<210> 23
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 23
atcccgggct tcgggagttt aagaggatgt cacg 34

<210> 24
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 24
gcgttaacct tgggtgcaca cactaaactg gtc 33

<210> 25
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 25
atcccgggcg gactgtcgtg gacgagtgtg ctag 34

<210> 26
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 26
gcgagctcgg cacgcaactg cacatcttct tgc 33

<210> 27
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 27
accagcctca acttagtcgc ctggac 26

<210> 28
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 28
gcgttaactt cacaatgacg gagctacgag agga 34

<210> 29
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 29
gcgagctcca gcctcaactt agtcgcctgg aca 33

<210> 30
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 30
ccctgctcaa cgcccagctg cataat 26

<210> 31
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 31
atcccgggtc agctcgtgga agtgttgcag ca 32

<210> 32
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 32
gcgagctcgt ccaattttca ctcgggggct tcc 33

<210> 33
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 33
gcgctgcaga tttcatttgg agaggacacg 30

<210> 34
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 34
cgcggccggc ctcagaagaa ctcgtcaaga aggcg 35

<210> 35
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 35
gctgacacgc caagcctcgc tagtc 25

<210> 36
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 36
ccagcttagc agcgacagta gcgacgt 27

<210> 37
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 37
cagtctgtct tccacggtag ttcct 25

<210> 38
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 38
ggccatggag aacaggaatc tggtgg 26

<210> 39
<211> 25
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 39
gctccgtagt tccaagccag agtag 25

<210> 40
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 40
gacactgatg agagtggcaa gctgag 26

<210> 41
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 41
gactcgatgc ttcaacgaga ggcag 25